REMARKS

Claims 1 and 2 are all the claims pending in the application. Claims 1 and 2 are amended. No new matter is presented.

To summarize the Office Action, the specification has been objected to, claim 2 has been rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement, claims 1 and 2 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Clarke et al. (U.S. Patent No. 3,141,660, hereinafter "Clarke"), and claims 1 and 2 have been rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Roder et al. (U.S. Patent No. 3,169,757, hereinafter "Roder"). The outstanding objection and rejections are each addressed below.

Objection to the Specification

The Examiner alleges that the material added by the previous Amendment of October 7, 2005 is not supported by the originally filed specification. In the previous Amendment, the specification was amended to describe the elastic material of the coupler as being "larger in stiffness than the coil spring".

Without conceding that the original disclosure does not support the addition, Applicant is canceling the subject matter added by the previous Amendment of October 7, 2005. In particular, the text added to paragraph 3 on page 5 and paragraph 2 on page 7 is deleted. Thus,

as the alleged new matter is cancelled, Applicant believes the objection to the specification to be moot, and withdrawal of the objection is respectfully requested.

Claim Rejections - 35 U.S.C. § 112

As noted above, claim 2 stands rejected under 35 U.S.C. § 112, first paragraph, as allegedly failing to comply with the written description requirement. In particular, the Examiner contends that the stiffness of the elastic material relative to the coil spring is not disclosed in the originally filed application.

Applicant notes that claim 2 has been amended to cancel the recitation of "said elastic material being larger in stiffness than said coil spring." Accordingly, the 35 U.S.C. § 112 is believed to be moot, and withdrawal of this ground of rejection is requested.

Claim Rejections - 35 U.S.C. § 102

<u>Clarke et al.</u>

Claims 1 and 2 stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Clarke. Applicant respectfully traverses and submits that Clarke fails to anticipate all the limitations of these claims, at least for the following reasons.

In this regard, Applicant submits that Clarke fails to teach or suggest all the limitations of the claimed coil spring of closed-end type defined by claim 1, which is characterized in that a

coupler is fixedly mounted between an outer peripheral surface of a terminal convolution of a coil element rod of the coil spring of closed-end type, the terminal convolution being partially flattened in cross section through a flattening process. Further, claim 1 defines an outer peripheral surface of a subsequent convolution subsequent to the terminal convolution of the coil spring of closed-end type, so that the coupler is brought into close contact with the outer peripheral surface of each of said terminal convolution and the subsequent convolution of the coil spring of closed-end type, whereby an amount of initial deflection of the coil spring of closed-end type is decreased when the coupler is compressed between the outer peripheral surface of said convolution and the outer peripheral surface of said subsequent convolution. Thus, the claimed coil spring provides for decreasing the initial deflection inherent in the coil spring.

As is clear from in lines 24-36 on column 1 of Clarke, Clarke provides a variable rate of coil spring. The number of effective coils "a" in the coil 10 spring of Clarke's embodiment is adjusted by inserting a helical rib 12 between adjacent ones of the coils "a" so as to adjust the coil spring 10 in spring constant (see Clarke's drawing and a description appearing in lines 37-60 on column 1 of Clarke). Further, Clarke discloses that the helical rib 12 is made of rubber or plastic material because the helical rib 12 forms a portion of a moulding 11 of rubber or plastic, as disclosed in lines 42-45, which states, "[r]eferring now to the drawing 10 denotes a conventional coil spring while 11 denotes a moulding of rubber or plastic material comprising a sleeve of bellows like formation having an external helical rib 12 .."

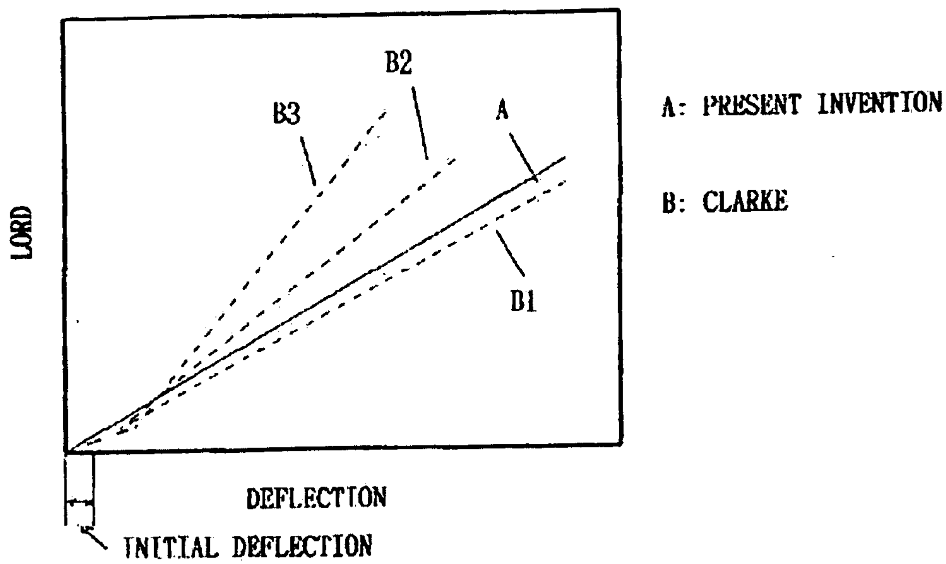
Further, the moulding 11 assumes a sleeve like shape is inserted in a terminal portion of the coil spring 10 and locked up or rendered inactive so that the coil spring 10 is varied in spring constant (see a description in lines 37-60 on column 1 of Clarke and Clarke' s drawings). Clarke's drawing clarifies the fact that a gap is clearly provided between each of coils "a" of the coil spring and each of the helical ribs 12. Such provision of the gap is also proved by a description appearing in lines 50-55 on column 1 of Clarke, as follows: "[i]t will be appreciated however that those coils of the spring between which the rib 12 is present will upon deflection or compression of the spring be locked up or rendered inactive so that effectively the rate of the spring will be varied."

In view of the provision of the gap between each of coils "a" of the coil spring 10 and each of the helical ribs 12, it is clear that the moulding 11 of rubber or plastic material is soft or flexible in operation. Consequently, such rubber or plastic material disclosed in Clarke is a soft or flexible material; otherwise the helical ribs 12 is broken since it is repeatedly hit by coils "a" of the spring 10 during use.

In other words, Clarke discloses the variable rate coil spring 10, which is varied in spring constant by very loosely inserting the helical rib 12 between adjacent ones of coils "a" so as to permit the coil "a" to freely move between the ribs 12 within a predetermined range upon deflection or compression in operation. Thus, Clarke definitely does not disclose nor suggest any of the stiff coupler of the present invention, because the terminal coil "a" of Clarke's spring is <u>clearly</u> prevented from being fixed to the adjacent coil "a" by the provision of the above-

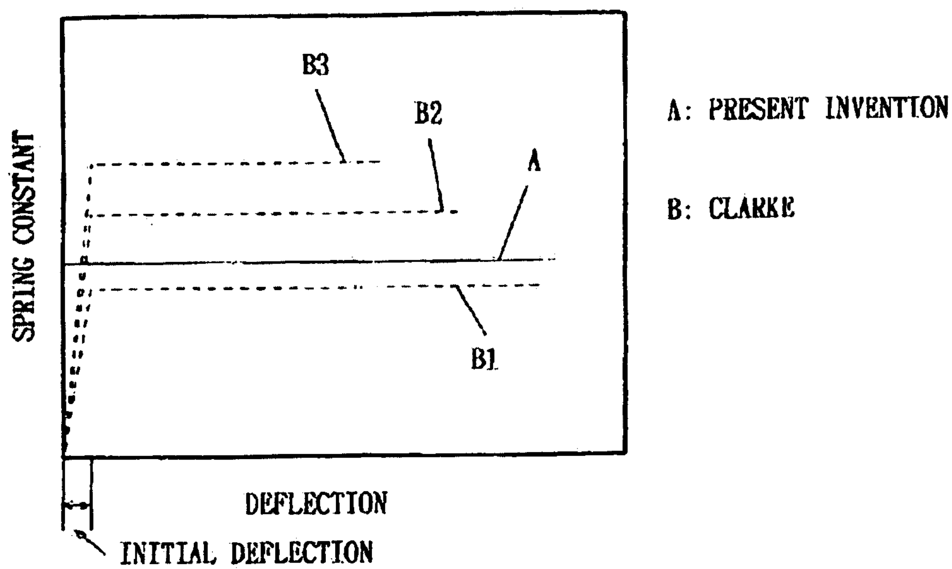
mentioned gap. Consequently, it is clear that Clarke does not disclose nor suggest the closed-end type coil spring with decreased initial deflection of the claimed invention.

With reference to the Reference drawings "Figs. Rl and R2" provided below, the differences between the claimed invention and Clarke will be described in greater detail.



LOAD DEFLECTION DIAGRAM

Figure R1



SPRING CONSTANT-DEFLECTION DIAGRAM

Figure R2

When the moulding 11, which assumes a sleeve-like shape, is short in length, the number of effective coils "a" increases. As a result, a "load-deflection" graph Bl in each of Figs. Rl and R2 shows the properties of Clarke's coil spring. In other words, as is clear from the graph Bl of Fig. Rl, the deflection of Clarke's spring increase while the spring constant of Clarke's spring decreases when the load of Clarke's spring increases.

On the other hand, when the sleeve-like moulding 11 is large in length, the number of effective coils "a" decreases. As a result, "load-deflection" graphs B2 and B3 in each of Figs. R1 and R2 show the properties of Clarke's spring. In other words, as is clear from these graphs B2

and B3, the deflection of Clarke' s spring increase while the spring constant of Clarke's spring decreases when the load of Clarke's spring increases. As is clear from the above description, Clarke's spring varies the number of coils "a" to gradually change its spring constant as illustrated in the graph Bl, B2 and B3.

When the gap is provided between each of the helical ribs 12 and each of coils "a" in Clarke's spring, the initial deflection occurs upon compression without fail, as illustrated in Figs. Rl and R2. In contrast with this, in the present invention, the stiff coupler 3 is used in place of the gap of Clarke's spring. In other words, the stiff coupler is used to decrease the initial deflection of the coil spring as shown in solid graph lines in Figs. Rl and R2, whereas the gap of Clarke' s spring is not used to decrease such initial deflection at all. Thus, Clarke fails to teach or suggest *at least* the feature of an amount of initial deflection of the coil spring of closed-end type is decreased when the coupler is compressed between the outer peripheral surface of said convolution and the outer peripheral surface of said subsequent convolution

Accordingly, reconsideration and withdrawal of the rejection of claim 1 is requested. Further, Applicant submits that claim 2 should be allowed at least by virtue of depending from claim 1.

<u>Roder et al.</u>

Claims 1 and 2 further stand rejected under 35 U.S.C. § 102(b) as allegedly being anticipated by Roder. At least for the following reasons, Applicant submits that Roder fails to teach or suggest all the limitations of these claims.

In the grounds of rejection, the Examiner contends that Roder teaches all the limitations of claims 1 and 2, and points to spring gripping ring 5 and spring 1 as the recited coupler and terminal convolution of a coil spring of closed end type, respectively. However, Roder discloses a holding and gripping device for helical springs or springs of the frustum type in which a gripping ring is disposed with a plurality of spring turns. *See* Roder at col. 1, lines 50-65. Further, Roder teaches that the spring gripping member may be made of a relatively hard rubber or a spring made of softer material. *See* Roder at col. 2, lines 20-24.

Applicant respectfully disagrees with the Examiner's position at least because the spring gripping ring, which the Examiner analogizes to the claimed coupler, is not between convolutions of the spring, as recited by claim 1. Rather, the gripping ring merely compresses a plurality of turns of the coil spring by the thread-like grooves 6 that are provided on the inner wall of the gripping ring 5. *See* Roder at col. 2, lines 58 - col. 3, line 13 and Fig. 1.

Thus, spring gripping ring 5 is not compressed in a gap between adjacent ones of convolutions or turns of the coil spring 1. In other words, Roder does not disclose or suggest at all any gap between the outer peripheral surface of terminal convolution of the spring 1 and the outer peripheral surface of the adjacent convolution subsequent to the terminal convolution of the same spring 1.

Rather, Roder discloses a spring gripping ring 5, which functions to grip the spring 1 in compressing and <u>even in expanding the spring 1</u>, which tends to increase the initial deflection of the spring 1 in use. In Roder, a gripping operation of the coil spring is achieved by the spring

gripping ring 5 when the ring 5 is radially outwardly expanded by means a tubular conical tensioning or adjusting member 2 inside the coil spring 1, so that the coil spring 1 has its radially inner peripheral surface gripped by the ring 5. As is clear from the above, Roder does not disclose not suggest any <u>reduction</u> in initial deflection of the spring 1.

Further, it is clear that the spring gripping ring 5 disclosed in Roder is made of a <u>flexible material</u> since the ring 5 must be flexible in view of its radially outwardly expanding operation performed by the adjusting member 2 in gripping the spring 1. However, it is impossible for such flexible ring 5 to fix the terminal convolution of the spring 1 to the adjacent convolution of the same spring 1 due to its flexibility, so that it is impossible to replace the stiff coupler 3 of the present invention with Roder' s flexible ring 5.

As is clear from the above, the spring gripping ring 5 disclosed in Roder is flexible and therefore quite different in construction, action and effect from the coupler of the present invention. Thus, Roder fails to suggest *at least* the features of a coil spring of closed-end type, characterized in that a coupler is fixedly mounted between and the limitation of an amount of initial deflection of the coil spring of closed-end type is decreased when the coupler is compressed between the outer peripheral surface of said convolution and the outer peripheral surface of said subsequent convolution.

Accordingly, reconsideration and withdrawal of the rejection of claim 1 is requested. Further, Applicant submits that claim 2 is allowable at least by virtue of depending from claim 1.

Conclusion

In view of the above, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

Respectfully submitted,

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